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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,352	02/27/2002	Hideo Nakamura	524642000500	6107

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Barry E. Bretschneider
Morrison & Foester LLP
Suite 500
2000 Pennsylvania Avenue, N.W.
Washington, DC 20006-1888

EXAMINER

DANIELS, ANTHONY J

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/083,352

Applicant(s)

NAKAMURA, HIDEO

Examiner

Anthony J. Daniels

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract *not exceed 150 words in length* since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The disclosure is objected to because of the following informalities: On p. 25, 4th paragraph, Line 5, "recoding" should be recording.

Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

5. Claims 5,6,13-16 are objected to under 37 CFR 1.75(c) as being in improper form

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because a multiple dependent claim should refer to other claims in the alternative only, and/or cannot depend from any other multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 9,10 are rejected under 35 U.S.C. 102(e) as being anticipated by Kobayashi et al. (US # 6,750,911).

As to claim 9, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera “10”) including: an image pickup device (Figure 1, CCD imager “20”) having a plurality of pixels that are provided with a photoelectric converting means (Col. 4, Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG “22” and microcomputer 40; Col. 4, Lines 30,31), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter “24”; Col. 4, Lines 56-58), wherein: said control means is capable of switching in the course of shooting moving images (Col. 8, Lines 11-49; Col. 9, Lines 30-32) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67, “...thinning out reading scheme...”), which calls for reading out the signal charges of a part of said image

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pickup device (Figure 5(A) and Figure 5B; Col. 5, Lines 66,67, Col. 6, Lines 1-17) and outputting the read-out signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), and a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19, "...pixel-mixing reading scheme..."), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A), Col. 6, Lines 18-20), summing up the signal charges of a plurality of pixels each (Figure 6(A), Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58).

As to claim 10, Kobayashi et al. teaches an image capturing apparatus as claimed in claim 9, wherein: the image pickup device is a CCD solid-state image pickup device (Figure 1, CCD imager "20") having a plurality of pixels of a plurality of colors arranged in a given pattern (Figure 2), and the summation readout mode calls for summation of signal charges of a plurality of pixels of the respective same colors (Figure 6(A) and Figure 6(B), $R3 + R4$, $G3 + G4$, etc.).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1-3,4/1,4/2,4/3,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (US # 5,880,781) in view of Kobayashi et al. (see Patent Number above).

Claim 7 will be discussed first.

As to claim 7, Udagawa et al. teaches an image capturing apparatus (Figure 3, still video camera) including a solid-state image pickup device (Figure 3, CCD "3") and a driving circuit (Figure 3, CCD Driver "2") for driving said solid-state image pickup device (Col. 4, Lines 64-67), wherein: said solid-state image pickup device includes a plurality of pixels that are provided with a photoelectric converting means (Figure 1, Col. 4, Lines 30-35) and consist of pixels of a first color (Figure 1, cyan pixels "C") and a second color (Figure 1, magenta pixels "M") arranged in a given pattern (Figure 1); said driving circuit includes: a plurality of first transfer paths (Figure 2B, Col. 4, Lines 30-36, "...VCCD.") for reading out and transferring signal charges of said pixels (Figure 2B, Col. 4, Lines 35,36), and a second transfer path (Figure 13E, HCCD; *{It is inherent in the system of Udagawa et al. that the second transfer path be included in the Figures 2A-D. Figure 13E is cited just to show applicant that a second transfer path does exist.}*) for reading out and transferring the signal charges transferred from said first transfer paths (Figure 13G; Col. 5, Lines 36-58); said driving circuit functions to: generate first summed charges (Figure 2D, C+M) by: reading out onto said first transfer paths a plurality of pixels that constitutes all or a part of the pixels of certain colors (Figure 2B, C1 and M1 are read out; Col. 2, Lines 62-67; Col. 3, Lines 1-17), while retaining the signal charges of specific pixels of those read in the previous step mentioned above by maintaining said specific pixels in the read-out state (Figure 2D, M1 retained in the VCCD), transferring the other signal charges read in said previous step (Figure 2D, C1 is transferred down to be added to M1) and adding the transferred

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signal charges to the retained signal charges (Figure 2D, C+M); generate second summed charges (C+G) by: reading out to the first transfer paths a plurality of signal charges of the pixels of certain colors (Figure 2B, C3 and G3) in the state where said first summed charges are located apart from where said plurality of signal charges of the pixels of the second color are going to be read (Figure 2D, C+M located apart from C+G), and summing up said signal charges of the pixels of the second certain colors on either one of the first transfer paths or the second transfer path, or both the first transfer paths and the second transfer path (Figure 2D, C+G is added on the first transfer path (VCCD)); and transfer said first summed charges and the second summed charges to the second transfer path (Figure 2D, C+M and C+G transferred down to the HCCD); and output the first summed charges and the second summed charges from the second transfer path (Figure 3, *{It is inherent in the system of Udagawa et al. that the added signal charges be transferred out of the HCCD to the S/H A/D block of Figure 3}*). The claim differs from Udagawa et al. in that it requires that the reading out and summing of said certain colors be of a same first color and a same second color.

In the same field of endeavor, Kobayashi et al. teaches a CCD driving method and apparatus for reading out, transferring, and summing of signals of a same first and second color (Figure 6(A), R3 + R4, G3 + G4; Col. 6, Lines 18-35). In light of the teaching of Kobayashi et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the reading out, transferring, and summing of signals of a same first and second color in the system of Udagawa et al., because an artisan of ordinary skill would recognize that reading out and transferring the signals of a same first and second color to be summed would provide a filtering process to be performed within the CCD imager, thereby removing aliasing

components. Accordingly, there is no necessity of newly providing a filter circuit to remove noise (see Kobayashi et al., Col. 1, Lines 58-63).

As to claim 1, claim 1 is a method claim corresponding to the apparatus claim 7.

Therefore, claim 1 is analyzed and rejected as previously discussed with respect to the apparatus claim 7.

As to claim 2, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: said first and second summation processes are performed with charges that have been read out to the first transfer paths being transferred in the forward or reverse direction (see Udagawa et al., Figure 2B, charges transferred in the right (forward) direction).

As to claim 3, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: said second summation process is performed with a plurality of charges of pixels of the second color being read out to given locations on the second transfer path (see Udagawa et al., Figure 2D, Figure 13F; Kobayashi et al., Figure 6(A), *{It is inherent in the system of Udagawa et al., as modified by Kobayashi et al., that the summed charges $R3 + R4$, $G3 + G4$ will be transferred to given locations on the second transfer path (HCCD), as shown in the downward direction arrow of Figure 2D in Udagawa et al.}*).

As to claim 4/1, 4/2, 4/3, Udagawa et al., as modified by Kobayashi et al., teaches a solid-state image pickup device driving method as claimed in claim 1, wherein: a charge coupled device (see Figure 1, Figure 2A; Col. 4, Lines 30-33) having charge readout electrodes (Figure 2A, Gates V1-V8) respectively corresponding to the pixels (see Figure 2A, V1, V2 belonging to

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C1, V3, V4 belonging to M1) is provided for the first transfer paths so that said readout and retention are performed by applying charge readout voltages to said charge readout electrodes (Col. 4, Lines 35-41; *{It is inherent in the system of Udagawa et al., as modified by Kobayashi et al., that voltages are applied to the gates (electrodes).}*).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (see Patent Number above) in view of Kobayashi et al. (see Patent Number above) and further in view of Yu (US # 6,034,366).

As to claim 8, Udagawa et al., as modified by Kobayashi et al., teaches an image capturing apparatus as claimed in claim 7. The claim differs from Udagawa et al., as modified by Kobayashi et al., in that it requires that the image capturing apparatus is provided with a processing means that is capable of reversing the order of the first summed charges and the second summed charges output from the solid-state image pickup device.

In the same field of endeavor, Yu teaches two horizontal transfer registers for transferring charges up as well as down (Figure 2A). In light of the teaching of Yu, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second horizontal transfer register in the system of Udagawa et al., as modified by Kobayashi et al., because an artisan of ordinary skill in the art would recognize that such a supplemental register would allow for different color charges to split up if need be (see Yu, Abstract, Lines 10-13) and an increase in the speed of the CCD readout.

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9. Claims 11,12/9, 12/10 and 12/11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (see Patent Number above) in view of Udagawa et al. (see Patent Number above).

As to claim 11, Kobayashi et al. teaches an image capturing apparatus (Figure 1, digital camera "10") including: an image pickup device (Figure 1, CCD imager "20") having a plurality of pixels that are provided with a photoelectric converting means (Figure 2, Col. 4, Lines 22-26) and arranged in a given pattern (Figure 2), a control means for controlling said image pickup device (TG "22"), and an image processing means to which signal charges output from said image pickup device are input (Figure 1, A/D Converter; Col. 4, Lines 56-58), wherein: said control means is capable of switching during preliminary measurements (Col. 8, Lines 11-52) between: an omission readout mode (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67), which calls for reading out the signal charges of a part of said image pickup device (Figure 5(A) and Figure 5(B); Col. 5, Lines 66,67; Col. 6, Lines 1-4) and outputting the readout signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58), a summation readout mode (Figure 6(A) and Figure 6(B), Col. 6, Lines 18,19), which calls for reading out the signal charges of the pixels of said image pickup device (Figure 6(A) and Figure 6(B); Col. 6, lines 18-20), summing up the signal charges of a plurality of pixels of the respective same colors (Figure 6(A) and Figure 6(B); Col. 6, Lines 18-30), and outputting the summed-up signal charges to said image processing means (Figure 1, A/D Converter; Col. 4, Lines 56-58). The claim differs from Kobayashi et al. in that it further requires the control means to switch to a mixed-color summation readout mode, which calls for summing up the

signal charges of a plurality of pixels of different colors, and outputting the summed charges to an image processing means.

In the same field of endeavor, Udagawa et al. teaches a mode of operation selected when a preliminary measurement is taking place (Col. 4, Lines 49-55) which is a mixed-color summation read out mode, which calls for summing up signal charges of a plurality of different colors (Figure 2D, C+M, C+G), and outputting the summed charges to an image processing means (Figure 3, S/H A/D "4"). In light of the teaching of Udagawa et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a mixed-color summation mode in the system of Kobayashi et al., because an artisan of ordinary skill in the art would recognize that mixed-color summations allow for the number of carriers read out to be halved and a chrominance signal can be attained (see Udagawa et al., Col. 2, Lines 8-29) in a high sensitivity color filter (see Udagawa et al., Col. 1, Lines 11-23).

As to claims **12/9, 12/10 and 12/11**, Kobayashi et al., as modified by Udagawa et al., teaches an image capturing apparatus as claimed in claim 11, wherein: the control means is adapted to switch the driving mode to drive the image pickup device between the summation readout mode and the omission readout mode in accordance with the light level of the shooting conditions (see Kobayashi et al., Col. 8, Lines 11-52).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272 - 7362. The examiner can normally be reached on 8:00 A.M. - 4:30 P.M..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Groody can be reached on (571) 272-7950. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
03/07/2005



NGOC-YEN YU
PRIMARY EXAMINER